



1

SEQUENCE LISTING

<110> TANAKA, YOSHIKAZU
ONO, EIICHIRO
NAKAMURA, NORIKO
MIZUTANI, MASAKO

<120> METHOD FOR PRODUCING YELLOW FLOWER BY CONTROLLING
FLAVONOID SYNTHETIC PATHWAY

<130> 47237.5008/00US

<140> 10/583,110
<141> 2006-06-15

<150> PCT/JP2004/019461
<151> 2004-12-17

<150> JP 2003-420046
<151> 2003-12-17

<160> 70

<170> PatentIn Ver. 3.3

<210> 1
<211> 1422
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (1)..(1371)

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 1
atg gga gaa gaa tac aag aaa aca cac aca ata gtc ttt cac act tca 48
Met Gly Glu Glu Tyr Lys Lys Thr His Thr Ile Val Phe His Thr Ser
1 5 10 15

gaa gaa cac ctc aac tct tca ata gcc ctt gca aag ttc ata acc aaa 96
Glu Glu His Leu Asn Ser Ser Ile Ala Leu Ala Lys Phe Ile Thr Lys
20 25 30

cac cac tct tca atc tcc atc act atc atc agc act gcc ccc gcc gaa 144
His His Ser Ser Ile Ser Ile Thr Ile Ile Ser Thr Ala Pro Ala Glu
35 40 45

tct tct gaa gtg gcc aaa att att aat aat ccg tca ata act tac cgc 192
Ser Ser Glu Val Ala Lys Ile Ile Asn Asn Pro Ser Ile Thr Tyr Arg
50 55 60

ggc ctc acc gcg gta gcg ctc cct gaa aat ctc acc agt aac att aat 240
Gly Leu Thr Ala Val Ala Leu Pro Glu Asn Leu Thr Ser Asn Ile Asn
65 70 75 80

aaa aac ccc gtc gaa ctt ttc gaa atc cct cgt cta caa aac gcc Lys Asn Pro Val Glu Leu Phe Phe Glu Ile Pro Arg Leu Gln Asn Ala 85 90 95	288
aac ctt cga gag gct tta cta gat att tcg cga aaa tcc gat atc aaa Asn Leu Arg Glu Ala Leu Leu Asp Ile Ser Arg Lys Ser Asp Ile Lys 100 105 110	336
gca tta atc atc gat ttc ttc tgc aat gcg gca ttt gaa gta tcc acc Ala Leu Ile Ile Asp Phe Phe Cys Asn Ala Ala Phe Glu Val Ser Thr 115 120 125	384
agc atg aac ata ccc act tac ttc gac gtc agt ggc ggc gct ttt ctc Ser Met Asn Ile Pro Thr Tyr Phe Asp Val Ser Gly Gly Ala Phe Leu 130 135 140	432
ctc tgc acg ttt ctc cac cac ccg aca cta cac caa act gtt cgt gga Leu Cys Thr Phe Leu His His Pro Thr Leu His Gln Thr Val Arg Gly 145 150 155 160	480
gac att gcg gat ttg aac gat tct gtt gag atg ccc ggg ttc cca ttg Asp Ile Ala Asp Leu Asn Asp Ser Val Glu Met Pro Gly Phe Pro Leu 165 170 175	528
att cac tcc tct gat tta cca atg agt ttg ttt tat cgt aag act aat Ile His Ser Ser Asp Leu Pro Met Ser Leu Phe Tyr Arg Lys Thr Asn 180 185 190	576
gtt tac aaa cac ttt cta gac act tcc tta aac atg cgc aaa tcg agt Val Tyr Lys His Phe Leu Asp Thr Ser Leu Asn Met Arg Lys Ser Ser 195 200 205	624
ggg ata ctc gtg aac acg ttt gtt gcg ctc gag ttt cga gct aag gaa Gly Ile Leu Val Asn Thr Phe Val Ala Leu Glu Phe Arg Ala Lys Glu 210 215 220	672
gct ttg tcc aac ggt ttg tac ggt cca act ccg cct ctt tat tta ctt Ala Leu Ser Asn Gly Leu Tyr Gly Pro Thr Pro Pro Leu Tyr Leu Leu 225 230 235 240	720
tca cat aca att gcc gaa ccc cac gac act aaa gtg ttg gta aac caa Ser His Thr Ile Ala Glu Pro His Asp Thr Lys Val Leu Val Asn Gln 245 250 255	768
cac gaa tgc cta tca tgg ctt gat ttg cag cct agt aaa agc gtg att His Glu Cys Leu Ser Trp Leu Asp Leu Gln Pro Ser Lys Ser Val Ile 260 265 270	816
ttc ctt tgt ttc gga aga aga gga gcg ttc tca gca caa cag ttg aaa Phe Leu Cys Phe Gly Arg Arg Gly Ala Phe Ser Ala Gln Gln Leu Lys 275 280 285	864
gaa att gcg ata ggg ttg gag aag agt gga tgt cga ttt ctt tgg ttg Glu Ile Ala Ile Gly Leu Glu Lys Ser Gly Cys Arg Phe Leu Trp Leu 290 295 300	912

gcc cgc att tca ccg gag atg gac tta aat gcg ctt ctg ccg gag ggt Ala Arg Ile Ser Pro Glu Met Asp Leu Asn Ala Leu Leu Pro Glu Gly 305 310 315 320	960
ttt cta tcg aga act aaa gga gta ggg ttt gtg aca aac aca tgg gtg Phe Leu Ser Arg Thr Lys Gly Val Gly Phe Val Thr Asn Thr Trp Val 325 330 335	1008
ccg caa aaa gag gtg ttg agt cat gat gca gtg ggg ggg ttt gtg act Pro Gln Lys Glu Val Leu Ser His Asp Ala Val Gly Gly Phe Val Thr 340 345 350	1056
cat tgc ggg tgg agt tcg gtt ctt gaa gcg ctg tcg ttc ggt gtc ccg His Cys Gly Trp Ser Ser Val Leu Glu Ala Leu Ser Phe Gly Val Pro 355 360 365	1104
atg att ggt tgg ccg ttg tac gca gag cag agg atc aat agg gtg ttc Met Ile Gly Trp Pro Leu Tyr Ala Glu Gln Arg Ile Asn Arg Val Phe 370 375 380	1152
atg gtg gag gaa ata aag gtg gcg ctg cca ttg gat gag gaa gat gga Met Val Glu Glu Ile Lys Val Ala Leu Pro Leu Asp Glu Glu Asp Gly 385 390 395 400	1200
ttt gtg acg gcg atg gag ttg gag aag cgc gtc agg gag ttg atg gag Phe Val Thr Ala Met Glu Leu Glu Lys Arg Val Arg Glu Leu Met Glu 405 410 415	1248
tcg gta aag ggg aaa gaa gtg aag cgc cgt gtg gcg gaa ttg aaa atc Ser Val Lys Gly Lys Glu Val Lys Arg Arg Val Ala Glu Leu Lys Ile 420 425 430	1296
tct aca aag gca gcc gtg agt aaa ggt gga tcg tcc ttg gct tct ttg Ser Thr Lys Ala Ala Val Ser Lys Gly Gly Ser Ser Leu Ala Ser Leu 435 440 445	1344
gag aag ttc atc aac tcg gtc act cgt taaagtttct tactcaatat Glu Lys Phe Ile Asn Ser Val Thr Arg 450 455	1391
atggcacatc ggtaacta ccaaattta t	1422

<210> 2
<211> 457
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic protein

<400> 2
Met Gly Glu Glu Tyr Lys Lys Thr His Thr Ile Val Phe His Thr Ser
1 5 10 15

Glu Glu His Leu Asn Ser Ser Ile Ala Leu Ala Lys Phe Ile Thr Lys
20 25 30

His His Ser Ser Ile Ser Ile Thr Ile Ile Ser Thr Ala Pro Ala Glu
 35 40 45

Ser Ser Glu Val Ala Lys Ile Ile Asn Asn Pro Ser Ile Thr Tyr Arg
 50 55 60

Gly Leu Thr Ala Val Ala Leu Pro Glu Asn Leu Thr Ser Asn Ile Asn
 65 70 75 80

Lys Asn Pro Val Glu Leu Phe Phe Glu Ile Pro Arg Leu Gln Asn Ala
 85 90 95

Asn Leu Arg Glu Ala Leu Leu Asp Ile Ser Arg Lys Ser Asp Ile Lys
 100 105 110

Ala Leu Ile Ile Asp Phe Phe Cys Asn Ala Ala Phe Glu Val Ser Thr
 115 120 125

Ser Met Asn Ile Pro Thr Tyr Phe Asp Val Ser Gly Gly Ala Phe Leu
 130 135 140

Leu Cys Thr Phe Leu His His Pro Thr Leu His Gln Thr Val Arg Gly
 145 150 155 160

Asp Ile Ala Asp Leu Asn Asp Ser Val Glu Met Pro Gly Phe Pro Leu
 165 170 175

Ile His Ser Ser Asp Leu Pro Met Ser Leu Phe Tyr Arg Lys Thr Asn
 180 185 190

Val Tyr Lys His Phe Leu Asp Thr Ser Leu Asn Met Arg Lys Ser Ser
 195 200 205

Gly Ile Leu Val Asn Thr Phe Val Ala Leu Glu Phe Arg Ala Lys Glu
 210 215 220

Ala Leu Ser Asn Gly Leu Tyr Gly Pro Thr Pro Pro Leu Tyr Leu Leu
 225 230 235 240

Ser His Thr Ile Ala Glu Pro His Asp Thr Lys Val Leu Val Asn Gln
 245 250 255

His Glu Cys Leu Ser Trp Leu Asp Leu Gln Pro Ser Lys Ser Val Ile
 260 265 270

Phe Leu Cys Phe Gly Arg Arg Gly Ala Phe Ser Ala Gln Gln Leu Lys
 275 280 285

Glu Ile Ala Ile Gly Leu Glu Lys Ser Gly Cys Arg Phe Leu Trp Leu
 290 295 300

Ala Arg Ile Ser Pro Glu Met Asp Leu Asn Ala Leu Leu Pro Glu Gly
 305 310 315 320

Phe Leu Ser Arg Thr Lys Gly Val Gly Phe Val Thr Asn Thr Trp Val
 325 330 335

Pro Gln Lys Glu Val Leu Ser His Asp Ala Val Gly Gly Phe Val Thr
 340 345 350

 His Cys Gly Trp Ser Ser Val Leu Glu Ala Leu Ser Phe Gly Val Pro
 355 360 365

 Met Ile Gly Trp Pro Leu Tyr Ala Glu Gln Arg Ile Asn Arg Val Phe
 370 375 380

 Met Val Glu Glu Ile Lys Val Ala Leu Pro Leu Asp Glu Glu Asp Gly
 385 390 395 400

 Phe Val Thr Ala Met Glu Leu Glu Lys Arg Val Arg Glu Leu Met Glu
 405 410 415

 Ser Val Lys Gly Lys Glu Val Lys Arg Arg Val Ala Glu Leu Lys Ile
 420 425 430

 Ser Thr Lys Ala Ala Val Ser Lys Gly Gly Ser Ser Leu Ala Ser Leu
 435 440 445

 Glu Lys Phe Ile Asn Ser Val Thr Arg
 450 455

<210> 3
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 3
 gaaatggtcg gattggctgg g 21

<210> 4
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 4
 acctccaccc caactttcag g 21

<210> 5
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 5
gatgcataat ttggctagaa aagc

24

<210> 6
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 6
ccaaatttgcc aaacactttc c

21

<210> 7
<211> 21 .
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 7
tgcctcgaat ggttgagcac g

21

<210> 8
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 8
ctctcactct cacacccg

18

<210> 9
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 9
cacgaatgct tagcatggct c

21

<210> 10
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 10
cttattgcc actgaaaccc c 21

<210> 11
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 11
tgtctgaatt ggcttgattc c 21

<210> 12
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 12
aacccacaga aaccctgtt c 21

<210> 13
<211> 1446
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide construct

<400> 13
atggaaaaac ttcacattgc cttattcca gttatggctc atggcacat gatcccaatg 60
ttggacatgg ccaagctctt tacctaaga ggcataaaaa caacaatcat ttgcactctc 120
gccttcgctg atccgataaaa caaagctcgat gattcgggcc tcgatattgg actaaggatc 180
ctcaaattcc caccagaagg atcaggaata ccagatcaca tggtaggcct tgatcttagt 240
actgaagatt ggctccaaa gtttggtag tcattagtct tattacaaga gccagttgag 300
aagcttatcg aagaactaaa gctcgactgt ctgcattccg acatgtctt gccttggaca 360
gtcgattgtg cggctaaagt cggattccg aggttggtt tccacgaaac gagcaacttt 420

```
<210> 14
<211> 1488
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 14
atggcccttc aaattcaacc agagcttcta aacttcgttt tcataccatt catggccct 60
ggccactcaa tccctatgat agacttagcc aaattattcg cggaacgcgg cgtcaacgta 120
acgatcatcg taacacacct taacgccga cgattcaatt ccgttattaa tcgagccgtt 180
gaatcaggac agtccattcg tcttctcaa gtaaaaatcc ctggtaaga agccgggtt 240
ccacctggat gcgaaagcgc cgagacttta ccatcttatg aattgattcc aaatttttt 300
accggcgtaa aaatgttaca acaaccaatc gaggaagaat tgagaaattt gatccctta 360
ccaagctgcg tcatttgta taaacacata ccctggactg ctcaaacgtg caagaatctc 420
cgaattccga ggataatttt cgatggaatg agctgttttgc tctctttagt aacacacgtt 480
ctctacgtgt ctaaggttca tgaaaaccgtt cctccaaacg agccgttgc tgttcctgat 540
ttccccgatg agatagagtt aacgagggtt caattgcacgg gtgttgaa tccaagtcca 600
aggataaaatt ttacgattt tcgcaacaa gtgaagaaaa ctgaggagga ggcttatggg 660
gtggtgttga acagtttga ggagctggaa aaagattatt tcgagatgtt tcgaaatttgc 720
aaagggggta aagtttggtg tgttgggcct ttgtcgctt atgtaacga cgatttggac 780
agggctggaa gagggaaataa ggcgtcgatt gatacggatc ggtgtatgaa atggcttgat 840
gatatgaaac cagaatctgt aatttatgcc ttgttggaa gcctgagtcg tttgtcgcgt 900
tcacagttcg tcgaacttgc ttgggattt gaagcatcaa aacactcggtt tggtcttagtt 960
gttaaaacgg aaggagagaa gtcgttgaa atagagaaat ggattttggaa caatgatttc 1020
gaggaaagaa cggaaagatag agggttctt attcgtgtt ggtcgccaca agtgttgatc 1080
ttgtcgattt ttgcagtggg aggattcttgc acgcatttgc gttggaaattt gacgcttgcg 1140
ggcattttgtg ctgggttgccc aatgggtatg tggccgatgt tcggcgaaca gtttttgaat 1200
gagaagtttag tggtgcagat ttggggacg ggtgtggag ttggagcgaa aagtacggta 1260
catttggggg atgaagagat ggatgagatg agagtgcacg ggaaggggat taccaaggcg 1320
gtcgtggcag ttatggataag aggaactgaa gggtgtgaga ggcggagaaaa ggcgaaggag 1380
cttggtgaaa tgctaaagag ggcagtccaa gttggggat cttcatgtaa gaatgtcgcac 1440
cagctaattc aagaagttgc accatttgagt gttagcgaggg atgtgttaa 1488

<210> 15
<211> 1446
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 15
atgggttctc tccctgaaaa tgagctcaac aaaccacatg ctgtgtcat accstatcca 60
gcactagggc atttcagtcc catgcttagat ttgctaagc tcctccacca aaaaggcttt 120
cacataacct tcgtcaacac cgagtacatc cgtctccgcc tcctcaagtc ctgtggccct 180
gccgcctgg acgggctacc ggactttcgc ttcatgacta tccccgatgg cctcccttg 240
tcggacgacg ttgcgtgta tgcgttcc attctgtct ctactaacaa aacttgctta 300
gaaccctttt gtgaggtgct atcgacatc atggataatg gttccaaaccc gccgggtgagc 360
tgcattgtgt ccgacggggat aatgagttt acccttgagg cggcggagag gtttggactg 420
ccagaggtgc tggctggac gcccgtgct tggcatct tagtttac gcagtataag 480
catcttgtgg agagaggata tgcgttccaa aaagatacga gccaggtAAC aaatggctac 540
ctggaaacaa tattagattt ggttccaggg atgaaggata ttcgatttgag ggaattccca 600
actttcataa gaacgacgga cccaaacgac gttatgctgg attttctaat aaaacaagtt 660
gacgccaccc cggaaagccaa tgctgtgatc atcaacacatc tcgacacatt gaaaagtgc 720
gctctcaacg ccctctctgt catgtttccg cgcataataca cactcgggcc tctccatatg 780
atgttgaata atcccgaggt cgacgaaccc tctaattgcaa tcaaatttaa tctttggaaa 840
gaagactcac attgcctaga ttggctcgat gtgaacgagc cccgatcgt tgcatacg 900
aattttggca gctcaacaat tctgactgtt gaacaactaa ctgaatttagc atggggcctt 960
gctaacagca agaaaccgtt ccttggatc atcaggcctg atttagtaac tggtgcatcc 1020
tccatgcttc cgcctgagtt cctggtcgag actaaagaca gaagcatgtt agtgagttgg 1080
tgcaccaag aacaagtgtt gaagcacccccc ggcactggag tggcttgac gcattgtgga 1140
tgaattcga cgttggaaag catttgcagc ggcgtgccaa tgatttggc gccttactac 1200
gctgagcagc aaaccaactg taggtacagt tgggtggaaat gggaaatagg aatggagatc 1260
attgacaacg atgtgaagag agatgagggtt gaattgctgg tgattaagtt gatggatggt 1320
atcaaggggaa agaaaatgaa aaagaaagct atggagtgaa agagggaaagc agaagaggcg 1380
gtagcttttggggctcttc ctacatgaat ttgataaaac ttattagcga cgtgctttttt 1440
ccataa 1446

<210> 16
<211> 1458
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 16
atggcagggtc caaattgcaaa gcctcacgcc atcatgatcg cacttcctta ccaaggccac 60
ataactcctt ttgtcaatct tgcactaaaa cttgcttcca atggctttac aatcactttt 120
gttcacctt aatttatcca ccaaatttttgc tctaaagccc ataacgccac taaaactgaa 180
gcagatttat tttcggaaagc acgagaatcc ggtctcgaca tacgttacac aacgattgac 240
gatggttcc ctttggaaattt cgcacagggtt ctccactccg aggagtattt gcactccatg 300
ttgcgagatt tcccgttaca cgtcgatgag tttgttgcggaa aagtctggaa gtcagagcca 360
tttttagagc acttttttgtt tacggataact atgtatacat ggcctgcaac cattgcaaaag 420
aaacataatc ttgtgaatat ttcgttttgg actgaaccag ccctgggttt ttctttgtct 480
taccatataa accttctgaa gcaaaatggt catttccat gtaaagaaaa tattgtatgag 540
gaaataaaattt acgttccagg agttgattca ataagtacaa gggatttaat gtcttattttt 600
aaagaacccag gatcagaaac attagagaaaa aatgttgc tcaaggcatt tgaaggagt 660

aagaaaagctg atttcatctt gcataacaca ttgcaagaac tagaatctga gacactctca 720
 gctcttacca aaatgcagcc aaattacgcc gttggaccta ttaattctc caaacatact 780
 cctaaaactg tcaccaagag tctacggctc gaattcgact gcaccaactg gctcgactct 840
 aagcctccca actctatttt atacgtctcg tttggtagtt ttattcagac aagcaaagag 900
 gtaattgaag aaatcgctt cggttcttc cttagtgaag ttaactttat atgggtgggt 960
 agaacagata gtgtgagttt agaggataac gaggtttgc cggttggatt tagggatgag 1020
 gtaaaagata ggggggttat agttccgtgg tttgtatcaaa ttacggttt gtctaattcgc 1080
 gcggttggag gattcttgac gcattgtga tggaaactcgg tattagagag tatgtgggt 1140
 ggcgttccta tgatttgtt tccgttaaca tatgtcaac ctactaatag gaaactattg 1200
 gttgatgatt ggaagattgg cattaatctt tgcacggag cggttattaa tagaaaagaa 1260
 attcgcagaga agatttaaggc cttgatgagt gaaagtactt cagagggtt gagggaaagaa 1320
 tctgagaaag ttaaggcctt gttgaagaat gcactggaag ttgggtggtc atcagagaag 1380
 aatttcaata aatttattga ggatttgaag gaaaaattc aaataatgaa agagcaaatg 1440
 cctgctaata ccagttga 1458

<210> 17
<211> 1443
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 17
atgggttcca cagccgaaaa taaacagaaa acccacattt tttgtcataacc ctacccagcc 60
caggggcaca tcagccccat gctaaaggta gccaaactgc tacaccaaaa cggctttac 120
atcacttttg tcaacacggc gtacaaccac cggccctca tcaagtcccg cggcccccacc 180
gccctcgacg gattggccga tttccgggtc gttacgatcc cggacggct tcctttctct 240
gaagccgacg ccacacagga tatcccttct ctttgtgtt caaccaccaa cacttgctt 300
gagccctttt gcgagctgct gtcgaacctc aataactccg gcccggacgt gccccccgggt 360
agctgcacatg tattccatgg tttcatgagc ttacacgttga aggccggcga gagatttggg 420
ctgcccggagg tgctgttctg gacgacgagt gctgtgggt tcttggcgta tacgcagtat 480
aagcatctcg tggagaaagg ctatgtaccc ctcaaagata tgagccaagt aacggatgga 540
tatttggaaa caagcatgga ctggatttca ggaacgaagg acatccaact aagggacttc 600
ccctcttca tcaggacaac agatccagaa gacatcatgc ttaattttt aataacaagaa 660
actgatgttg ttccgagagc caaagctgta ataatcaaca ctttcgacat gttagaacac 720
gacgtcctgg aagcgctctc caccatgtt tcacgcgtt acagcatcg ccctcttcag 780
ctgatgatga attatgttca caacgagttcc cttaaatcca tcagttccag tctatggaaa 840
gaagaaacac attgcgtcga ttggctcgat tcaaaggagc cggaaatccgt tttgtacgta 900
aattttggca gcataactgt cgtactgca gaacaactga ctgagttgc gtgggggctc 960
gctaatacgta agaagacttt cctatgggtt attaggcctg atataggcgtc tggagactcg 1020
gctatgctgc cccctgaatt cgtgacgggg acaaaaagata gaagcatgtt aatcagctgg 1080
tgttaaccaag aacaggtgtt gaatcaccca tcaattggag gtttttgc gcacagtgg 1140
tgaattcga cgattgaaag tatagtcgag ggagttcctg tgatttgcgt gcctttctt 1200
gctgagcagc aaacaaattt taggttca gtcgtggaa gggaaatagg aatggagatt 1260
gataataatg tgaagagaga tgaggttga gttttgggtga gggaaattgtt ggtatggag 1320
agggggaaaga aatgaagga gaaagctatg gagtgaaag ggaaagcatt agaggcaact 1380
gcacttgggg gctcttccta cttgaacttg gaaaaactaa ttaaggaggt gctttgcatt 1440
taa 1443

<210> 18
<211> 1407
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 18

atggcatctt	ctccccataa	ccagccaaacc	acgccccgcc	acgtggtggc	cctaccctac	60
cccgccgcg	gccacataaa	ccccatgtc	aacatctgca	aagccgtgc	ggagaagagc	120
agccacatca	acataacaat	cattctaacc	gagaatggc	tccgcttaat	cggctcagcc	180
gacaagccgc	cgaacataag	ctacgcccgc	ataccgaaca	ttctgcgcgc	ggagcacgtt	240
cgcggcgagg	atccacatgg	ttttgggcg	gctgtttggc	agaagatgga	ggagccggtt	300
gatcggtgc	tggacgagct	tccgcttaat	aataacaaggc	cggagtttgt	gatagccgat	360
gctttcttc	attggcgcc	tgacgtggc	ggcaggagga	atattccctt	ggcatctgtt	420
tgc当地atgt	cggcgccac	gttcacgggt	cttaccact	ttgacccctt	cgttgaccac	480
ggacactttc	cgtcgacat	accagtgaat	ggagatgct	tttgaggata	catcccggga	540
ctccctccag	ttcgcgtcgc	agattttcca	aaagacataa	aaaaacaaga	agacgcattc	600
ttcgtcctt	aactcattcc	caactcacca	aaattcatca	tcttcacttc	aatttacgac	660
ctc当地atcc	agatcatcga	cgtctaaag	caaaaatctt	ccttctcaat	ctacaacatt	720
ggccctctat	cttccttattc	caaactcaaa	cacatcctca	actcggataa	aatcacgaaa	780
cctgatcaag	ataacccga	ctacttaaaa	tggtagatc	tccaaacctcc	caactccgtc	840
ttgtacattt	cactcgccag	tttcctatcc	atttccgcag	cccaaattgga	tgaactcgca	900
accggaatac	gaaactctgg	tgtccgctt	ttgtgggtgg	cacgtggcga	aacaaaccgg	960
ttgaaagaga	tttgggtgt	tcatgaaaag	gggctgatca	tagaatggtg	cgatcaaatg	1020
cagggtctt	ctcattcttc	gttgggtgga	ttcttgcgc	attgtgttg	gaattcgact	1080
aaagaggcgt	tgatggccgg	ggtgcgcgtt	ttgactattc	caattatgtt	tgatcaagtg	1140
tctaacgcga	aggcgctcgt	ggaagattgg	agggtgggtt	ggagggtgg	aatgagttt	1200
aatgaagaag	agttgggtgg	aggagatgag	attgcgataa	tttgaggag	gtttatggat	1260
atggaaaatg	gtgagaggaa	agagttgacg	aaaaatgtga	aagaggtgca	gaagatttgt	1320
gcgagagagt	tcgaagatgg	agatggacag	tcgtttgagt	ttaatgtga	aagtttgggt	1380
caatttatttc	tgcaatttggg	tccgtaa				1407

<210> 19
<211> 1428
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 19

atgaacaaca	caacccaaca	acaaacagta	gcattagcac	tagcacctca	ctgtttaatc	60
gtccccattcc	cattccaagg	ccacattaac	cccttactcc	aattcgccaa	acgcctcata	120
actcaccaca	acaaaaacct	c当地aaatcaca	ttcgcactca	ccaaattcat	cctcaccaac	180
ctctcctccg	gtgcccggaga	atcatccttc	tctctccgggt	caatctccga	cggcttcgac	240
gccggccggcc	gchgctcaggc	caactccggc	gccgaatacc	tctccaaatt	ccgcgagatc	300
ggatctcaaa	cccttaaccga	acttatccaa	gaccatatccg	aatcggtcg	acccgttgc	360
tgcgtggct	acgaccgggt	cgtagcttgg	gccttagatg	ttgccaaggg	taaattcgga	420
atttcaacgg	cggcggtttt	tacgcagtc	tgtcggtgg	ataatata	cagtcgggtt	480
tataacggcg	atttggagct	gccgttgcgc	gagaatgagg	tggtaggtt	tccgggtttt	540
ccggagatgg	agccgttga	gatgcccggc	tttgggtatt	taaaccgggtc	gtacccgtcg	600
agttttgaga	tgggtgtggg	ttagtttagg	aatgttgatg	aggcggttt	ggttttgtc	660
aacactttt	atgagttgga	gaaagagggtc	attgactgg	tgtcaaaatc	ttggcgagtg	720
aaagcaattt	gacctaccat	accatcaat	ttcatggaca	agagattgca	agaggacaaa	780
tcatacggtc	ttagcatgtt	caagcataca	acaaatgact	gcataaattt	gctcaacgg	840
aaacaatcaa	aatccgtcat	ttatgtcgca	tttggaaatc	ttgcagaatt	atcccacgac	900
caaactcaag	aactggcaca	cgccttaaca	acctacgaca	aacacttctt	atgggttgt	960
cgtatcatcg	aagaagctaa	gttcccccaa	aattttgcta	acgaaacatc	taagaaaggg	1020

ttgatagtgt cgtggtgccc tcaatttagag gtcttgcgc acgaggccat cggttggttc 1080
 gtgactcatt gtgggtggaa ttcaacgctc gagggattga gtttgggggt gcctatggtg 1140
 gcgatgccac agtggacgga tcagagtacg aacgctaagt ttatcgatc tggttgggggt 1200
 gtgggtgttc gggctaagggt ggacgaggggg ggatttagcga ggcaagatga gatagttcg 1260
 tgcttagggaa gcgtcatgga aggggagaac ggagaaaaga taagaagaa tgcaatgaa 1320
 tggaaaggaac gggcgtgcaa tgcagtttat gaagggggga gttcagacaa aaatattgaa 1380
 gaatttgtta ctacgttgc aagttcccat gacttgcgtc aagagtaa 1428

<210> 20
 <211> 1425
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide construct

<220>
 <221> modified_base
 <222> (1349)
 <223> a, t, c, g, unknown or other

<400> 20
 atgtcttagtg agagccaaat aaacttagtg ttcatccctc tccctgtaaa gggacacatt 60
 gtctcaacgc tagagacggc aaagctactc gtcgatcgaa acaaacgcct caccatcaca 120
 atccctcctca tgaagctgccc agtcgacgccc aaggtagatg attccctcac aaaaaatccc 180
 tcctgctctc aaataacttt tgcacatctc cctcgaatcg agcacagttc catggAACCA 240
 ccgggaactc ccgaatcctt tgcacacagg ttgcgtcgaga gccaaaaatg tctcgtaaga 300
 gatgcgggtgg ttaaagcaac ggagggctca aaatcaaaca ggctagccgg atttgcata 360
 gacatgttct gcaccccgat gattgtatgtc gccaatgaat ttggcgcccc gacatacg 420
 gcttcacgt ccggggccgc aactctcgcc ctattgttcc atttgcagag tcttagagat 480
 gaatttaatc aggacgtgaa ggagtacgag aactcgaaag ttgagatatc gatcccggct 540
 tatgttaacc cgttcccttc caaatccttgc cgcgtccctg tcttcaacga ggacgggtt 600
 tttcttagtc ttgcaaggg gttcagagag gctaaaggta tattgtcaaa cacctttta 660
 gaatttgaat cccatgccc taaatcgctc tccaaacgatg cgagaatccc gcctgtttac 720
 cccatcgggc cagtaattca cgccacggaa gataatgcaa acaaaggaaa gcaggacgaa 780
 atcatcgcgat ggcttgcacgc gcaacctgtat tcattccgtcg tggccgttttgc 840
 gctggatgct ttgaagaaaa tcaagtgaag gagattgcag tggcgctcga caaaagtgg 900
 taccgggttt tatggtcatt gagaaagccg cctcccaaag aaaaagcgga gtttccaggg 960
 gagtacaaag attttaatga agttttacca gaagggttct tacaacgtac gtccgggaga 1020
 ggtaaggtaa taggatgggc tccgcagatg gccgtttgt ttcacaatgc ggtgggagga 1080
 ttctgtcgc attgcggctg gaactcgacg ttggagagtg tttggcgcc agtgccaatg 1140
 gccgtgtggc cattggcgcc cgagcaacat gcaacgcgt tccagttgtt gaaggagttt 1200
 ggaatttgcgg tggagattaa gatggattat aggaagaaca gtgggtgtat tggggaggca 1260
 aaaatgattt agaaaggaat cagggagttt atggacccgg aaaaatgat aaggggtaat 1320
 gtgaaagtga tgaaaaagga gaggtagana gctgtcgatgg atgggtggac ttcttttgc 1380
 tacttggatc gttttgttgc aactgtcgatc aataatgttt tgtga 1425

<210> 21
 <211> 1446
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide construct

<400> 21

```

atgggttccg tagccggaaa cagttacaaa cggcctcatg ctgtgtgc acccttccc 60
gcgcaggggc acatcaaccc catgctgaag ttgccaaac tcctccacca aaagggc 120
cacatcacat tcgtcaacac agagtacaac caccggcgt tgctcaagtc cctcgcccc 180
gacgctctcg atggcttgcc ggatttccga ttgcaccca tccccgacgg tcttcctccg 240
tctgacgcgg acgtcaactca ggatgttct tctttgtt tgccaccac taacacttc 300
ttggagccct ttaccgagtt gctgttggaa ctaataact ccggcccgga cgtgccaccg 360
gtgacctgca tcgtctcgga tgggtgtcatg agttcacat tgaaggcggc ggagaggtt 420
gcgctgccgg aagtgtgtt ctggacgacg agtgcgtgt gttcttgc gtacacgcag 480
tataagcgtc tcttggagaa aggctatgtc cctctcaaag atatgagcca gttacaataat 540
agctatctgg aaacaaccct cgactgggtt ccaggaatga aggatatccg attaaggac 600
ttcccatcat tcatcaggac aacggatcca aaagacatca tgtacaattt cgtattacaa 660
gaaaccgacg ctgtctccag agccaaagct ctgtatcatc acaccttca tacattggaa 720
cgcacgttg taaatgcctt ctccaccatg tttccacgtg ttacaccat cggctcttt 780
cagctgatgt tggaccaagt tcatgacaag agcctaacg ccatcaactc caatctctgg 840
aaagaagaat cgcaatgcat cgattggctc aattcaaaaag agccgaatc cgttgtgtat 900
gtgaatttcg gtagtgtcac tgggtgtact gctcaacaac tgacgaaatt tgcgtgggg 960
cttgcaaca gcaacaagac ttttttatgg gttatttaggc ctgatataatg tttggagac 1020
tcggcaatgc tgccccctga attcttgacg gacacggaaag acagaagcat gctaataagc 1080
tgggtgtacc aagaacaggt gttgaggcac cttccatcc gaggattttt gacgcacagt 1140
ggttggaaact cgacgcttga aagtattgtc agcggagtgc ctatgatatg ttggcctt 1200
tttgctgagc aacagacaaa ttgttaggtt agtgcgtgg aatggaaat aggaatggag 1260
attgacaata atgtgaagag agatgagggtt gaggtgctgg tgagagagtt gatggatggt 1320
gaaaaggggg aaaaaatgaa gaagaaagct atggagtgaa agatgaaagc agaagcagca 1380
gctgcccctg ggggaccttc gtcttaaat ttgaaaaac ttattgagga ggtgctttt 1440
caataa 1446

```

<210> 22
<211> 1308
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 22

```

atgaaggctc atgcagtgtat gtttccttgc cccgtacaag ggcacttaaa tcctatgctg 60
aaactggcca aaatattgca ttcaagaggc ttcttcatca cattcgtgaa cacggaattc 120
aatcacaatc gtctagtgcg tgcgagaggc cccgaatctg ttAAAGGTcg cgatgatttt 180
cagttaaaaa ccataacctga tggactaccg cttttgata aggacgcaac gcaagacata 240
cctcaactgt gtgattcttct tcaaaaagaat ggtttccctc cattgttggc ctttattaa 300
agtattaaat attcaccggc ctgtccaaat gttacctgtt tagtgattga ttggccatg 360
agttcgctc ttgatgcggc cgagggtttt aaaaattccca cggtgtactt ttgcacaact 420
agtgcgttg gattcatggg gttttgcaat tatgaagagc ttgtgaatcg aggattgtt 480
ccacttaaaat atgaaagtca aataactaat ggctatcttgc ataccaaact agactgggt 540
ccagggatga agaacattag gctcagagat ttcccttagtt tcattccaaac gactgatcca 600
gatgatatac ttgtgaactt catgattttt aacatgaaga atgcgcctcg tgcaaaaggct 660
gtggtagtca acacattcga tgaattggag aaagatgtat tggaggccct aagtaaaaaaaa 720
tttgcattat tttttccat aggcccactc caattgttgc agaaggcttt cccaaaggct 780
gaggtaaaat ctataggatc aagcttgcgg aaagaagaca acacgtgc tgcctggctc 840
aacggcaggg agccaaattc tgggtgttgc gtgaactttt gaagcatcac agtgcgttca 900
cctcaacaac tattggagtt cgcatggggc ctagccaata gcaaccatta cttttgtgg 960
atcataaggc cagatttggt aagtggagaa tctgcgattt tatccgaaga gtactcaaag 1020
gaagttgaag ggccggcgat gatggtgcgt tgggtcttc aagagcaagt attggcccat 1080
ccttcggtag gtggattctt gacacattct ggcttggact cgcactatcga aggaatgtca 1140

```

```
gaaggtgttc ctatgattt ttggccttt tttgctgacc aacagaccaa ttgtcggtat 1200  
gcatgcacgg agtggggat tggaatggag attgaaggag aggttacgag ggataaaagtg 1260  
gcggatttgg taaaaatatt gatggaggag ggaagggag acgatga 1308
```

<210> 23
<211> 1506
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 23
atggccattc atgaacaaaa acctcacttt gtcctgttcc cttcatggc acaaggccat 60
atgattccca tggtagatat cgccagatta ctcgcgaagc gcgggtgtcac aatcaccatt 120
ctactcacac cccacaatgc caacagggtc aaaacagtca ttgctcgatc aatcgattca 180
ggactaaata tcaatgtcat ccacttcaaa ttccatccg ttgaggtcg attgcccggaa 240
gggtgtgaga atttcgatat gtccttgac atcaatggcg cattgcgtt tttcaagggcc 300
actttcatgt tacaagaaca ggtcgaagag ttgcttcaa agtcgagcc tcttcggc 360
tgcctaattt ctgatatgtg ctttccatgg acaacaatc ttgcttggaa gttaatgtt 420
ccaagaattt tggttccacgg gacaagttgc ttccatcc tatgttatgca cgttttagga 480
acttcttaagg atttcgaagg tgtgactaac gaaacggagt acttccttgt gcctggatta 540
ccagataaaa tcgaaataac caaaattcag ctttagggca cccttattca aatgaattca 600
gactggacga agttcgtga tgaggtgcg gaggctgagg taaaagcatt tggaacgggt 660
gccaataactt ttgaagattt ggaaccagag tatgtcaaaag aatacagcag agttaaaggc 720
aaaaaaagtct ggtgcataagg tcctgtttca ttatgcaaca aagatggcat agacaaggcc 780
gaaagaggtt acatggcttc aatcgacgca caccattgtc tgaagtggct caattcacac 840
gaacaaaagt ctgttattt cgtctgcctt ggaagcatat ctcgcctcgc tacttcacaa 900
ctgatagagc ttggattggc tttagaagca tcaaacaagac ctttatttg ggtagttaga 960
gatccatcac aagaacttaa aaaatggttt ttgaatgaga aatttgagga aagggttaaag 1020
gatagaggcc ttttgcataa cgggtggcg cctcaagtgc tcatacttcc catccatct 1080
gttggagggt ttgtAACGCA ctgcggctgg aactcgatgc ttgaagggt tacttcaggc 1140
ttgccatga taacgtggcc tggatgttgc gagcagttt gtaatgaaaa gtttattgtt 1200
cacgtatca agactggat aagagtgggt gttgaagtgc ctatcatctt tggagatgaa 1260
gaaaaagtctt gagttttggt gaagaatgtt gagataaaaga tggttataga taagttgtt 1320
gatggaggag aagaggggaga agagagaaga gagagagtc aaaagcttgg agaaatggca 1380
aaaaaggccaa tggaggagggg tggatgttgc tatcataatt tgacatcggt catgcaagat 1440
gtcatgtatgc aacaagctaa taatggagat caatatgaag atgggtttac agttataaat 1500
acatgt

```
<210> 24
<211> 30
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 24
ggggatcca tggctagtga gagccaaata

<210> 25
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 25
ccctcgagg gtacccata aaacattatt cacgac

36

<210> 26
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 26
atgggagaag aatacaagaa aaca

24

<210> 27
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 27
taaaatttgg tagttaaacc gatgta

26

<210> 28
<211> 1386
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide construct

<400> 28
atgctgagcc tcgccaaaat tctgcaccaa aaggattcc atatcacttt cgtaaacact 60
gaatttaacc atgaacgcct cctgagaacg agaggcccga attcccttga cgggttgcct 120
tcgtttcgat tcgagacaat tcccgacggt ctccgcct cagaccccgta tgctacacaa 180
aacgttgcat tatttttga gtccagcaca tccaaatgct tagtccatt cagggacctt 240
cttgctaagc taaaccacac cgacgtgccg ccagttactt gcataactatc cgacttaatc 300
atgagcttca ctcttgaagc tgctcaagag ctcagcatcc ctgatgtcct tttttggacc 360
gctagcgctt gtggataacct cgcttatgca cactatgcc cgcatttttga aaaaggattt 420
acaccttca aagatacggat ttgcttgacc aatgggtatt tggataccgt tattgtatgat 480
attccttagtc tgaaaggcat acgtctgaga gacattccaa gttttatcag aacaactaat 540

ccagatgaca ttttcatgaa ctttgcgttg cgagaaaacag agagagctag aaaaggttcc 600
 gccgtaatct ttaacacgtt cgagtgcctc gaggttgaag cattaaacgt actttcatcc 660
 atgttgcctc cagtttacac agttggaccc ctgcatttgg ttgaaaagca tggttgtcac 720
 aaaggattgg aggtgtttgg atcaaattt tggaaaagaag agccaaaatg tctcgatgg 780
 cttgactccc aaattccaa ctcagtggtt tacgttaatt ttggaagcat cgctgtcatg 840
 acaactgacc aactgattga gtttcttgg ggcttgcta atagcaacat atccttctt 900
 tggttataaa gacctgaccc tgcgtcaggg gaaaacgctg ttcttccacc cgaatttctc 960
 gaagccacaa aagaaagagg gtgttagca aattggtgcc ctcaagagaa agttcttagc 1020
 cacccatcca tcagaggatt cttaaactc acggttgcgtt attcaactct tgagagcatt 1080
 tgcagtggag ttccaatgtat cagttggccg ttcttgcgg aacaacagac taactgttgg 1140
 tttgtgtca caaaatgggg cataggcata gagctagaca atgatgtcaa aaggataaa 1200
 gtggaaagacc ttgtgcgcga attgtatgtt ggggataaaag ggaaagagat tatgaaaatg 1260
 gctatggagt ggaagaagct ggccgaagag tctgcccaga gttcatctt taagaatcta 1320
 gagaaggatgtt ttcatgaagt gttttacca ccactacaag tgcgtggatcc taaggattcc 1380
 acctaa 1386

<210> 29
 <211> 1374
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide construct

<400> 29
 atggaggacatcatacggttct ctacgcttca gcagagcacc ttaactccat gctactactc 60
 ggc当地actca tcaacaaaca ccacccaca atctccgtcg ccattatcag caccgcccc 120
 aacgc当地ccg ctatgtccgt cgccgacgtg gccc当地tat cttatcagca actcaaaccg 180
 gccactctcc ctccgatct aacccaaaac ccaatcgagc tcttcttcga aatcccacgt 240
 ctacataatc ctaacttgcgt cgaagcgtg gaagaactgt cactaaaatc aaaagtaagg 300
 gcatttgcgtt tagatttctt ttgc当地tccc gcatttgcgg tttcgacttag cttgaacata 360
 cccacttact tctatgtcag cagcggcgcg tttggctat gc当地gttctt gcatttccg 420
 acaatcgcacg aaactgtcga aaaagacatc ggtgactga acgatatctt ggagatccc 480
 ggttgc当地cc cggtttgtc ctccgattt cc当地aaaggta tggatcttc当地 caagagtaac 540
 acttacaagc attttttaga cacggc当地aa aacatgagga gaggc当地agg gatcgtgg 600
 aacgc当地tcg acgc当地tggaa gttccgagct aaagaaggccc tc当地caacaa tctgtgc当地 660
 cccaaatc当地 ccaactccccc agtttctt gtc当地cccat tggatcgagc aagcacaact 720
 acgaaaacca caaacaaca gcacgatgc tt当地aaatggc tggatcgatc gccagacaga 780
 agc当地tgc当地 tcttatgtt cggtaggagg ggttgc当地tcc cccgatc当地tcc attgaaggaa 840
 atcgcaattt gtc当地ggagaa cagcggccac agttccctgt gtc当地gtc当地 tt当地ccca 900
 agtaaggc当地 actt当地ataa cactgatccg gacccgtc当地 agctccctgc当地 cgagggg 960
 ttgtccagga cccgatc当地 cggatcccg gggttc当地gtg atcaatgc当地 tggatcgatc当地 gaaggagg 1020
 ctgagccatc ggc当地gttgg agggttgc当地tgc当地 acgactgtg ggaggatcc gatattggaa 1080
 gccggatc当地 tggatcgatc当地 gatgatc当地ggg tggatcgatc当地 acgatcgatc当地 gaggatgaat 1140
 agggatc当地 tggatcgatc当地 gatgatc当地ggg gctggatcgatc当地 tggatcgatc当地 ggaggaaagg 1200
 ttc当地gttgc当地 cggatc当地 ggatcgatc当地 gatgatc当地ggg tggatcgatc当地 gaagaatggg 1260
 agagc当地gttca ggc当地ggatc当地 ggatcgatc当地 aaagtggccg ctgaggtggc ggttgc当地aaag 1320
 ggtggatc当地 cggatc当地 ggatcgatc当地 tttggatc当地 tggatcgatc当地 tt当地aa 1374

<210> 30
 <211> 1362
 <212> DNA
 <213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 30
atggaggcg acaaagaaaa tctcaagatt ttaatgttcc catggttgc tcataggcat 60
atatttccat ttcttgagct agccaaaaga atcttgaagc gaaaaaaactg gcacatatac 120
tttgttacca cagccataaa cttagtct atcaacaact tcattgaaaa atataagttg 180
gagaactcaa tagaagtagt agaactccat atagaaccat cccctgaact tccacctcat 240
taccacacta caaagaattt gccaacaagt ctcaattcta ccctattaaa ggccattcag 300
acgtcgaatt cgagcttc agacatcatc agaacattga aacctgaact agtgatata 360
gatgttccc aaccttggc tgccaaagatt gcttcctcac aaggattcc tggctttat 420
tttcttagct ttggaggggc accattatca cttatgcac tcaccacac gtacggaaaa 480
cccgaaattt ctttccaagc aatagttgtt gagacatcg aactggaaag ttgctctc 540
ttgtttgatt tcttgatgc caacatattt gaagtggatc aagattatct ttttggaaat 600
ttcaagcaat ctgttgcatt tttttgtt aagagtatc aaggattga gaggaaagtac 660
atcgattatc tttcatctt gtctcagaaa aaaatattac ctgttggacc actagtccac 720
gttgacaata agaccaatga ggagaattcc gagatcatga attgggttag caagaaaaaa 780
caccattcaa ctgttcatat ttccttcggt agtgaatact tcctgtctaa agaagagatt 840
gaagagatag caaaaaggct tgagttttt gatgttaact ttatatggat catcagattt 900
ccagttggag tgaccgttaa cttagaagaa acactgcctc aaggttcct tcaaagggtg 960
aacgaacggg ggatgggtt ttcaggatgg gcaccacaga gcaacatattt agcacatcca 1020
agcacaggag gctttgtgag tcactgttgg tggagttcta tcacagaaag cgtatatttt 1080
ggtgttccgg tcataaggat ggcaatgaaa cttgatcagc caataaacgc cagaatgtt 1140
tcagaggctg gtagttgtt cgaagtcaaa agatatgaaa atgaagtgtt taggggagaa 1200
gagatagcga aggcgataaa gaaggtgatt gttgaggaca gtggagaaag gctgcggcaa 1260
agagctttag aattgagcga gaagatgaaa atgaagagg aaaatgagat ggtgaagta 1320
actgagcagc tgtggagct ttgcttgacg aaaaaacggt aa 1362

<210> 31
<211> 1437
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide construct

<400> 31
atggAACCTC atatagttat attcccggtc atgtccaaag gccacacaat ccctctcctc 60
cacctctccc acctcctcct tagtcgcgga gtacgcgtaa cgatcttcac cactgcacaa 120
aaccaccctt tcatacgctca acatgtccca aaaacaaata atgttaccat cattgaccta 180
ccgttccctg ataacatccc tggatttca ccaggaacgg agagcacgga caaaactcccg 240
tcgatgtctc tcttcgtccc gttcgtgaac gccgcttaat cgatgcaacc gttcttcgaa 300
gatgagctt agaaaattca ttcagggtt agttgttta tatcgatgg ttttcttcat 360
tggacgctga aatcagcatc caagttcgga attccacgac tgagttctca cggtatgagc 420
tactatgcct tgacaatttt tcgagtcgt atctcaaaca agttaatatac attgcacgag 480
tcaccgcacg aggattcac cttacctagt tttccttggg ttaaactcac tagagatcac 540
ttcgacaaac cacttgatca acgtgaacca aatggtccgc aatttgactt ttcatggaa 600
gcaacgcacag ctactgtgaa tagctatggt ttcttagtga atagctctca tgagcttgaa 660
ccaaacctcg cggattacta tgacaacaat tacaacccca aggcgtggag tgcggccct 720
ctctgcctcg cacaaacgcc aaagaatgtat aatctctcgat cgaagcctga gtggattcat 780
tggcttgacc aaaagtggaa acaagatcgc cctgtttgtt acattgcatt cggatcacaa 840
gcagaaattha cactagaaca gttacatgaa atctcacgag ggttggaaaga gtcaaatgt 900
cactttttgtt gggtttaag gaacaatggaa gttgaactaa gtatggatt tgaagacagg 960
gttaagaata gaggaaattgtt agtaaaagaa tggttgatc aaagagagat tcttgaacat 1020
gaaagtgtaa aaggcttct aagtcatatgc ggcttggaaat cggtaatggaa aggtatatgt 1080

gcggagggttc tgattcttgc gtggccaatg atagcggagc aacacttgaa tgcaaagatg 1140
 gtgagtgaag aaataaaagat tggtttgaga gttgaaacgg ttgatggaac ggcaaaggaa 1200
 tttgtgactg cggcgagttt gacgaaggcg gtgatggaat tcatggagg tgagaaggaa 1260
 aaggaattga gggagaatgt gaagaaagtg gcggggcag cgaggaaagc ggtgggtggaa 1320
 ggtgggtcgatgttgaatgaa ctcatgtatg aggtgtgttag gcataaggaa 1380
 atgagtggta gttctaaagt tgatgaaaac aagaggaaa ttaaggatataa 1437

<210> 32
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 32
 cccatggag aagaatacaa gaaa

24

<210> 33
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 33
 ggtacctata aaatttggta gttaaa

26

<210> 34
 <211> 1080
 <212> DNA
 <213> Homo sapiens

<400> 34
 caccgattac atgacgtaca tggcaagta cgacagtgtt catggtcagt gaaaaacacca 60
 cgagttgaag gtacaggatg agaagaccct tctgttttgtt gaaaaggccag taagagtctt 120
 gtcactgggt gtcttacgg acaaagataa ggctgctgt cacttgaagg gtgggtccaa 180
 gaagggttgtg atctcagcac caagcaaaaga tgcaccaatg tttgttgtgg gtgtcaatga 240
 gaaggaatac aaaccagagt tggacattgt ttccaatgtc agttgcacta ccaattgcct 300
 tggcccttttgc gccaagggtca ttaatgatag atttggaaattt gttgaggccc tcatgaccac 360
 cgtccactctt attaccgcaa ctcaaaagac tgcgtatggg ccatcgagca aggactggag 420
 aggtggaaaga gtcgtatcgt tcaacattat cccagcagc actgggtcag ctaaggctgt 480
 tggtaaagtgttgc tcccaatggaa gctaaccggaa atggcccttcc gtgttcctac 540
 tgcgtatgtc tccgtatgttgc acctcactgtt caggctcgag aaagaggcca cttatgtatgaa 600
 gatcaaagct gctatcaagg aggaatccga gggcaaccctt aaggccattt tgggctatac 660
 cgaagatgtatgttgc tcaacattat cccagcagc actgggtcag ctaaggctgt 720
 caaggctggaa attgcattga gcaagacgtt tgcgtatgtt caggctcgag aaagaggcca cttatgtatgaa 780
 atgggggttac agttcccgatgt tgcgtatgtt caggctcgag aaagaggcca cttatgtatgaa 840
 ttgcgtatgttgc tcaacattat cccagcagc actgggtcag ctaaggctgt 900
 ttgtataat gggcttttgtt gttatgttgc gcttacattttt gcaatgttgc aatttatgtt 960
 ttgttgcgtatgttgc aaccttattttt attaccctttt cgcgttgggt tattgtatgtt 1020
 gactctttt tactgtatgttgc ttttacgttc tctctttttaa aaaaaaaaaaaaaaaa 1080

<210> 35
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 35
tggctgtt aacgatccat 20

<210> 36
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 36
agctttcca cctctcca 18

<210> 37
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer /

<400> 37
atgttcaaaa atcctaataat ccgc 24

<210> 38
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 38
tttagccatca agctcaatct tgaca 25

<210> 39
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 39
aacagctatg accatg 16

<210> 40
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 40
gctttaccat ggagtaatga gctt 24

<210> 41
<211> 1367
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide construct

<400> 41
gtatgtatgt atgtatgcta tatacgagtc gataaaaggta atcgaaaaatca ttttcgacaa 60
ataccaaacct cgtgagagaaa tcttctcgat catatggcac gagcaggacc actaacccta 120
acttcgcgtag cgctcgagaaa atcgctgcatt gaaaaggta taaggacgaa agacgagagg 180
ccttaacttag catacgatca atttagcagt cagattccat tgatctctct ctctggatc 240
gacgatgaat gtaataagaa gaaagagctg tgcaagagaaa tagcgcaggc atgcgaagat 300
tggggtattt ttcaagtgtat cgatcatggg atcgatttga aactcgtcaa cgatatgact 360
cgtttggtct gtgagttctt cgatttgcgg gacgaagaga agctgagggtt cgatatgtct 420
ggtggggagaa aaggagggtt cattgtttcg agccacccat agggcgaggt ggtccaagac 480
tggcgcgaga tcgtgaccta cttcacatac cctatcaaag gccgtgacta ttccctgtgg 540
cccgacaagc ccgaggcatg gcggggccgtg acagagaccc acagctcgca gctaattgtgc 600
ctgggctgca aattgtctagg aatcctatcc gaggcaatgg gcctcgaaag agaagcgctg 660
accaaggcct gtctgaacat ggacaaaaaa gttgtggta acttttaccc aaaatgcct 720
cagcccaatt tgacattggg cctgaagagg cactcgacc caggtttgat cactctgctg 780
tttcaggata acgttggcgg gcttcaagcg actcgagacg gcgggaagtc gtggatcacf 840
gtccagccccg ttgagggtgc attcgtggtc aatcttggta attttgcctca ttacttgagc 900
aatggaaaggt tcaagaacgc ggatcatcga gcgggtggta attcaaacac gaatagaatg 960
tcgatcgca cgttcaaaaa cccatcgcca gaggctatcg tgtaccctct caagatcgga 1020
gacgacggga agcccattat agaaaaagccc atcactttag gagaatgtaa caagaggaag 1080
atggctaaag acattgaact tgccaaagctc aagaagcttag ccaaggaaca aaagttgc当地 1140
gaagaagttt ttaataatgt tgaagatcat catcttaaca atggaaaaac taaataggag 1200
gttaagggtct ttaaggaaac tgacgttgc ttgtgattgt tatatattct ctatgtcgta 1260
ttcgctttaa ggttgtcaga tgaaaatatc gaccatgttta ggtatataat ttatatgaat 1320
tgtattgcct agtcggccat attatgatta aaaaaaaaaa aaaaaaaaaa 1367

21

<210> 42
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 42
ttctctgtcg acgcccattg cc

22

<210> 43
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 43
cgccgtgtcg actcgcttga ag

22

<210> 44
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 44
aattatttcc caatgttcaa aaat

24

<210> 45
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 45
tggagcttta ggtttgtgaa a

21

<210> 46
<211> 23
<212> DNA
<213> Artificial Sequence

22

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 46
atgggagaag aataacaagaa aac

23

<210> 47
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 47
tcttacgata aaacaaaactc a

21

<210> 48
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 48
atcatcgagc ggtggtgaa

19

<210> 49
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 49
tgcccgacta ggcaatacaa t

21

<210> 50
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 50
cccttctgtt tggtgaaaag cc

22

<210> 51
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 51
cctcggttcc ctccttgata gc 22

<210> 52
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 52
cccatatatata gccatggaag ataccatcg 29

<210> 53
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 53
tagtgttgtagt gagtcgggggg atttcg 26

<210> 54
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 54
aatgggatgc ttccgacttc t 21

<210> 55
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 55
cagtggtttc tgccattgct t

21

<210> 56
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
probe

<400> 56
aggaaaaaac aggctgaaaa

20

<210> 57
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 57
catcgagcgg tggtaatt

19

<210> 58
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 58
ctggcgatgg gtttgaaa

19

<210> 59
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
probe

<400> 59	
aaacacgaat agaatgtcg	19
<210> 60	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 60	
gaagatgacc ttgcgggtgat tt	22
<210> 61	
<211> 25	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 61	
ttgtcctt ccccttata ggttt	25
<210> 62	
<211> 26	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
probe	
<400> 62	
agttcgccgg gagttcgtg agtctg	26
\	
<210> 63	
<211> 17	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 63	
ggttggcccg catttca	17

<210> 64		
<211> 20		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Description of Artificial Sequence: Synthetic		
primer		
<400> 64		
tagaaaaaccc tccggcagaa	20	
<210> 65		
<211> 17		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Description of Artificial Sequence: Synthetic		
probe		
<400> 65		
agatggactt aaatgcg	17	
<210> 66		
<211> 21		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Description of Artificial Sequence: Synthetic		
primer		
<400> 66		
gcattgagca agacgttgt g	21	
<210> 67		
<211> 21		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Description of Artificial Sequence: Synthetic		
primer		
<400> 67		
acgggaactg taaccccatt c	21	
<210> 68		
<211> 18		
<212> DNA		
<213> Artificial Sequence		

aaa acc gtc ccc gga gac atc gcg gac ttc aac gac ttt ctt gaa atc Lys Thr Val Pro Gly Asp Ile Ala Asp Phe Asn Asp Phe Leu Glu Ile 145 150 155	600
ccg ggg tgc cct ccg ctt cac tcg gct gat gtc cct aag ggt ttg ttc Pro Gly Cys Pro Pro Leu His Ser Ala Asp Val Pro Lys Gly Leu Phe 160 165 170	648
cga cgc aag act att gct tac aaa cac ttc ctc gac act gcc aac aac Arg Arg Lys Thr Ile Ala Tyr Lys His Phe Leu Asp Thr Ala Asn Asn 175 180 185 190	696
atg cgg atg tcg agt gga atc ctc tta cac gcg ttc gat gcg ctt gaa Met Arg Met Ser Ser Gly Ile Leu Leu His Ala Phe Asp Ala Leu Glu 195 200 205	744
tac cga gct aag gaa gct ttg tcc aac ggc ttg tgc aat ccg gac ggg Tyr Arg Ala Lys Glu Ala Leu Ser Asn Gly Leu Cys Asn Pro Asp Gly 210 215 220	792
cca act ccg cct gtt tac ttt gtt tcg cct act gtg gct gaa aca ttg Pro Thr Pro Pro Val Tyr Phe Val Ser Pro Thr Val Ala Glu Thr Leu 225 230 235	840
gca tac agg gaa aac acc gcc gcc ttg cgg cat gaa tgc ttg acg tgg Ala Tyr Arg Glu Asn Thr Ala Ala Leu Arg His Glu Cys Leu Thr Trp 240 245 250	888
ctt gat ttg cag cct gat aaa agc gtt atc ttc ctt tgt ttg gga agg Leu Asp Leu Gln Pro Asp Lys Ser Val Ile Phe Leu Cys Phe Gly Arg 255 260 265 270	936
agg gga aca ttc tcc atg caa cag ttg cat gaa att gct gtc ggt ctt Arg Gly Thr Phe Ser Met Gln Gln Leu His Glu Ile Ala Val Gly Leu 275 280 285	984
gaa cgg agc ggg cga aga ttt ctc tgg gcc atc cgc agt agt ggg gca Glu Arg Ser Gly Arg Arg Phe Leu Trp Ala Ile Arg Ser Ser Gly Ala 290 295 300	1032
ggg aac ggt gag cct gac ttg agc gtg gtg ctg ccg gag ggt ttc ttg Gly Asn Gly Glu Pro Asp Leu Ser Val Val Leu Pro Glu Gly Phe Leu 305 310 315	1080
gag aga acc aaa gat att ggg ctg gtg ata acg aca tgg gcg ccg cag Glu Arg Thr Lys Asp Ile Gly Leu Val Ile Thr Thr Trp Ala Pro Gln 320 325 330	1128
aaa gag gtg tta agc cat gtg gcc gtg tgt gga ttt gtg acg cac tgc Lys Glu Val Leu Ser His Val Ala Val Cys Gly Phe Val Thr His Cys 335 340 345 350	1176
ggc tgg aac tca gtt ctc gag gcg gtg tcg ttt ggg gtt ccg atg att Gly Trp Asn Ser Val Leu Glu Ala Val Ser Phe Gly Val Pro Met Ile 355 360 365	1224

ggg tgg ccg ctg tac gca gag cag agg atg aat cggtt atg gtg 1272
 Gly Trp Pro Leu Tyr Ala Glu Gln Arg Met Asn Arg Val Phe Met Val
 370 375 380

 gag gaa ata aag gtg gca ttg cct ttg gag gag gag gcgcg gat ggg ttg 1320
 Glu Glu Ile Lys Val Ala Leu Pro Leu Glu Glu Ala Asp Gly Leu
 385 390 395

 gtg agg gcgcg aca gaa ttg gag aag cgg gtg aga gag ttg acc gag tcc 1368
 Val Arg Ala Thr Glu Leu Glu Lys Arg Val Arg Glu Leu Thr Glu Ser
 400 405 410

 gtg agg gga aaa gcg gta agc cgg cgg gtg gag gaa atg aga ctc tcg 1416
 Val Arg Gly Lys Ala Val Ser Arg Arg Val Glu Glu Met Arg Leu Ser
 415 420 425 430

 gca gag aag gcc gtg agc aag ggt gga acg tcg ctg att gca ttg gag 1464
 Ala Glu Lys Ala Val Ser Lys Gly Gly Thr Ser Leu Ile Ala Leu Glu
 435 440 445

 aaa ttc atg gac tcg att act cta taagcgtaag agtttgctata aatttagcta 1518
 Lys Phe Met Asp Ser Ile Thr Leu
 450

 tgttgcacgg atacgtcaaa taaaccttgc tcgtattctt agatacgtat actatacaaa 1578

 tacaatttat gaataagttt ttcatatggc gtatgaagta ttcttaattaa attaaataac 1638

 acgttttgaa gcgttattat aaggcgtaa ctagtaaata ataagaaata attaaacaaa 1698

 aaaaaattat gatgttaatg ataattttat taatattta tactataaag ttcttaatat 1758

 tcttgttcat atgtaagttt attatataag tattttaaatgtt gttttttttt gttttttttt 1818

 tttaagtacc atcgtggaat acttttatg gagcttataa tttaatgtt gaatagattt 1878

 catattaata tttttttttt tatgtgaaca aaaaatatta ttgtcaagt tattttttttt 1938

 tatattttta tatataataag tattttttttt aaaaatatta acgtttttttt tgctatcct 1998

 tattttacaa agtttccccgtt attcgtttca ttgttttttttcat attcgatatat 2058

 gtgtttttttt ccgttgcataa tagtaaattttt gttatggatgtt gttttttttttt 2118

 caaaaataatg tttttttttttt tttttttttttt tttttttttttt aaatataat 2178

 tccatattttttttttt attccattttttttttt tttttttttttt tttttttttttt aaatataat 2220

<210> 70
<211> 454
<212> PRT
<213> Linaria bipartita

<400> 70
Met Glu Asp Thr Ile Val Phe Tyr Thr Pro Ser Asp His Ser Gln Pro
1 5 10 15

Thr Ile Ala Leu Ala Lys Phe Ile Ser Lys His His Pro Ser Ile Ser
 20 25 30

 Met Thr Ile Ile Ser Thr Ala Ala Phe Pro Ser Ser Ala Ala Val Leu
 35 40 45

 Pro Lys Thr Ile Ser Tyr His Pro Leu Pro Ala Val Pro Met Pro Pro
 50 55 60

 Asn Leu Ser Ser Asn Pro Val Glu Phe Leu Phe Glu Ile Pro Arg Leu
 65 70 75 80

 His Asn Thr Lys Leu Arg Glu Ala Leu Glu Arg Ile Ser Glu Thr Ser
 85 90 95

 Lys Ile Lys Ala Leu Val Ile Asp Phe Phe Cys Asn Ser Ala Phe Glu
 100 105 110

 Val Ser Arg Ser Leu Asn Ile Pro Thr Phe Phe Glu Ala Ser Leu Gly
 115 120 125

 Ala Ser Gly Leu Cys Glu Phe Leu Tyr His Pro Thr Phe His Lys Thr
 130 135 140

 Val Pro Gly Asp Ile Ala Asp Phe Asn Asp Phe Leu Glu Ile Pro Gly
 145 150 155 160

 Cys Pro Pro Leu His Ser Ala Asp Val Pro Lys Gly Leu Phe Arg Arg
 165 170 175

 Lys Thr Ile Ala Tyr Lys His Phe Leu Asp Thr Ala Asn Asn Met Arg
 180 185 190

 Met Ser Ser Gly Ile Leu Leu His Ala Phe Asp Ala Leu Glu Tyr Arg
 195 200 205

 Ala Lys Glu Ala Leu Ser Asn Gly Leu Cys Asn Pro Asp Gly Pro Thr
 210 215 220

 Pro Pro Val Tyr Phe Val Ser Pro Thr Val Ala Glu Thr Leu Ala Tyr
 225 230 235 240

 Arg Glu Asn Thr Ala Ala Leu Arg His Glu Cys Leu Thr Trp Leu Asp
 245 250 255

 Leu Gln Pro Asp Lys Ser Val Ile Phe Leu Cys Phe Gly Arg Arg Gly
 260 265 270

 Thr Phe Ser Met Gln Gln Leu His Glu Ile Ala Val Gly Leu Glu Arg
 275 280 285

 Ser Gly Arg Arg Phe Leu Trp Ala Ile Arg Ser Ser Gly Ala Gly Asn
 290 295 300

 Gly Glu Pro Asp Leu Ser Val Val Leu Pro Glu Gly Phe Leu Glu Arg
 305 310 315 320

Thr Lys Asp Ile Gly Leu Val Ile Thr Thr Trp Ala Pro Gln Lys Glu
325 330 335

Val Leu Ser His Val Ala Val Cys Gly Phe Val Thr His Cys Gly Trp
340 345 350

Asn Ser Val Leu Glu Ala Val Ser Phe Gly Val Pro Met Ile Gly Trp
355 360 365

Pro Leu Tyr Ala Glu Gln Arg Met Asn Arg Val Phe Met Val Glu Glu
370 375 380

Ile Lys Val Ala Leu Pro Leu Glu Glu Ala Asp Gly Leu Val Arg
385 390 395 400

Ala Thr Glu Leu Glu Lys Arg Val Arg Glu Leu Thr Glu Ser Val Arg
405 410 415

Gly Lys Ala Val Ser Arg Arg Val Glu Glu Met Arg Leu Ser Ala Glu
420 425 430

Lys Ala Val Ser Lys Gly Gly Thr Ser Leu Ile Ala Leu Glu Lys Phe
435 440 445

Met Asp Ser Ile Thr Leu
450